

AN OBSERVATION OF UNUSUAL ICE CRYSTALS

By C. ROBERT ELFORD

[Weather Bureau, Boise, Idaho, April 1936]

Ice crystals of unusual size were found on the morning of February 28, 1936, at Boise, Idaho, in what had been on the previous afternoon a shallow mud-puddle. The crystals were suspended one-quarter to one-half inch above black soil; the water below apparently had soaked into the ground.

The entire collection of crystals, shown in figure 1, was 22 inches in diameter, and consisted of a number of "stars", some alone and others in clusters. The largest individual "star", shown in figure 3, was $4\frac{3}{4}$ inches in diameter, while the others ranged downward to a very small size. The large cluster of crystals near the center of the group, shown in figure 2, was 6 inches in diameter. Scattered between the "stars" and the clusters, apparently without any regularity, were triangular-shaped crystals, all in vertical planes; these triangular crystals each extended downward from a vein along the upper edge, as shown in figures 1 and 3.

The temperature had fallen slowly during the night, from 35 degrees at midnight to a minimum of 31.6 at 7 a. m., and had risen to 32 by 8 a. m. at which time the pictures were taken. Wind during this period did not exceed 3 miles per hour at any time. The sky was over-

cast with alto-stratus until about 7:30 a. m., when it started to break, and by 8 a. m. only one-tenth alto-cumulus remained. The crystals were within 3 feet of a building to the south, and within 15 feet of buildings to the north and east, and were thus well sheltered from any disturbing influence.

In the photography of the crystals, a verichrome film pack was used in a 9 by 12 centimeter Kodak Recomar camera with a double-extension bellows. Since it was impossible to get advantageous lighting with a vertical shot, it was necessary to take the picture with the camera slanting downward about 30 degrees, and with the lens about 20 inches from the subject. It was then necessary to stop the lens down to f: 32 in order to get the proper depth of focus. The first picture, taken at 8 a. m. mountain standard time or 7:15 local mean time, was given 20 seconds in accordance with a photometer reading. The second picture, about 10 minutes later, took only 13 seconds; while the third, 10 minutes still later, required only 6 seconds. To the eye, the change in light between exposures was imperceptible, yet when the films were developed uniformly in the same tray their densities were almost exactly the same.

MONTHLY TEMPERATURES, 1925-35, AT THE MONTEZUMA STATION OF THE SMITHSONIAN INSTITUTION

By C. P. BUTLER

[Smithsonian Institution, Washington, D. C., April 1936]

The following tables contain the monthly mean and extreme temperatures recorded from 1925-35 at the Montezuma Station of the Astrophysical Observatory of the Smithsonian Institution, Calama, Chile. The daily records are on file at the Smithsonian Institution.

The station on Mount Montezuma is at longitude 68°56' W., latitude 22°40' S., and altitude 8,895 feet. The temperature data constitute an interesting example of a record at a high mountain station in a dry region.

TABLE 1.—Monthly mean temperatures (centigrade)
($\frac{\text{maximum} + \text{minimum}}{2}$)

Year	January	February	March	April	May	June	July	August	September	October	November	December	Mean	Highest	Lowest
1925	14.8	14.2	12.0	11.4	14.8	14.1	14.4	15.9	16.1	14.4	33.0	-1.0			
1926	16.0	16.7	16.6	15.5	13.2	13.3	11.9	12.6	13.4	14.2	15.2	14.4	14.4	32.5	-2.0
1927	15.8	15.6	15.4	15.0	13.6	11.1	12.9	13.2	12.7	14.0	15.6	15.6	14.2	32.0	-3.5
1928	15.4	16.2	14.9	14.3	13.1	11.3	13.1	12.1	12.3	13.7	14.3	14.3	13.7	36.0	-10.0
1929	15.8	15.4	15.5	14.4	12.7	10.1	12.3	11.1	12.7	13.6	15.5	15.8	13.7	33.0	-3.5
1930	15.9	15.4	15.9	15.7	13.7	14.2	13.0	12.2	14.6	13.4	15.4	16.2	14.6	32.0	-3.0
1931	16.7	15.8	15.5	14.7	12.4	11.7	11.7	12.9	11.3	15.2	12.8	15.6	13.9	32.0	-5.5
1932	15.9	16.9	15.2	14.1	12.8	10.4	13.3	12.4	14.0	14.0	13.3	15.1	13.9	32.0	-4.5
1933	15.4	15.7	14.6	13.4	12.5	11.0	10.0	11.8	11.8	12.6	12.5	13.1	12.9	31.5	-3.0
1934	12.9	13.7	13.4	12.5	12.9	10.4	10.9	11.9	10.7	11.7	12.1	12.1	12.1	28.5	-4.5
1935	13.5	12.6	13.6												

TABLE 2.—Monthly maximum temperatures (extremes)

Month	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
January	30.5	32.0	29.5	32.0	32.0	30.0	29.5	31.5	23.0	26.0	
February	31.0	31.5	36.0	28.0	29.0	29.0	32.0	27.0	28.0	23.5	
March	31.5	32.0	29.0	31.0	31.0	31.0	29.5	28.5	25.0	24.5	
April	32.0	31.0	31.0	30.0	30.0	29.0	27.0	26.0	25.0		
May	29.0	27.0	29.0	26.0	30.0	29.0	26.0	27.0	26.0		
June	28.0	26.5	29.5	27.0	26.0	29.0	26.0	29.0	27.0	22.0	
July	29.5	29.0	32.0	27.5	29.0	31.5	27.5	27.0	23.0	23.5	
August	33.0	28.0	32.0	33.5	24.0	30.0	31.0	26.5	28.5	28.5	
September	30.5	32.5	28.5	28.0	26.0	30.0	27.5	30.0	26.5	24.0	
October	33.0	32.5	30.5	31.5	28.0	30.0	32.0	32.0	26.0	25.0	
November	30.0	29.5	31.0	30.0	32.0	30.0	28.0	28.0	24.5	24.5	
December	31.0	30.0	29.5	28.0	33.0	32.0	30.0	30.0	24.5	25.0	
January											

TABLE 3.—Monthly minimum temperatures (extremes)

Month	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
January	3.0	3.0	2.0	2.5	5.0	3.5	4.0	2.5	2.5	1.5	
February	4.0	3.5	1.5	2.5	3.5	2.5	4.0	5.0	3.0	2.0	
March	4.5	1.0	3.0	3.0	2.5	3.0	3.0	4.0	3.0	3.0	
April	2.0	3.0	0.5	0.5	3.0	2.5	3.0	0.0	1.0		
May	0.0	1.0	1.5	0.0	0.0	1.5	-5.5	1.0	1.0		
June	0.0	0.0	-1.0	-0.5	-3.5	0.0	0.0	-4.5	-2.0	-1.0	
July	-1.0	-2.0	-3.5	-10.0	-2.0	-3.0	-1.0	-3.0	-3.0	-4.5	
August	-1.0	-1.0	-2.0	-9.5	-1.0	-3.0	0.0	-1.0	-1.0	-2.5	
September	1.0	1.0	-2.0	0.5	-1.0	1.0	-1.0	-1.5	-0.5	-2.0	
October	1.0	0.5	0.5	0.1	1.0	1.0	2.5	-1.0	-1.0	-1.0	
November	2.0	1.0	1.0	0.5	1.0	3.0	-0.5	-1.0	0.0	-1.0	
December	1.0	0.5	3.0	0.5	1.5	2.0	2.0	1.0	1.0	0.0	



FIGURE 1.—Group of ice crystals, 22 inches in diameter. The cluster near the center is shown in figure 2, and the large crystal just to the right is shown in figure 3. Boise Idaho, February 28, 1936; 8 a. m., f: 32, 20 seconds: camera inclined downward 30°.



FIGURE 2.—Crystal cluster, 6 inches in diameter.



FIGURE 3.—Ice crystal, $4\frac{3}{4}$ inches in diameter. Note the vertical triangular crystals in the upper right-hand corner. 8:10 a. m., f. 32, 13 seconds; inclination of camera, 30° downward.